# APPENDIX

**Appendix A: Search Strategy for Review on Economic Evaluations of Hepatitis C Virus**

## NHSEED

1. exp Hepatitis C/di [Diagnosis]
2. Hepacivirus/
3. (hepatitis c or hcv or hepacivirus*).tw.
4. exp Hepatitis C Antigens/ or exp Hepatitis C Antibodies/ or exp Hepatitis C/
5. 2 or 3 or 4
6. Mass Screening/
7. (screen* or test*).tw.
8. 6 or 7
9. 5 and 8
10. 1 or 9

**MEDLINE**

1. exp Hepatitis C/di [Diagnosis]
2. Hepacivirus/
3. (hepatitis c or hcv or hepacivirus*).tw.
4. exp Hepatitis C Antigens/ or exp Hepatitis C Antibodies/ or exp Hepatitis C/
5. 2 or 3 or 4
6. Mass Screening/
7. (screen* or test*).tw.
8. 6 or 7
9. 5 and 8
10. 1 or 9
11. exp Hepatitis C/ec [Economics]
12. exp "Costs and Cost Analysis"/
13. exp models, economic/
14. markov chains/
15. Quality-Adjusted Life Years/ or choice behavior/
16. Mass Screening/ec [Economics]
17. (economic evaluation* or cost benefit* or cost effective* or cost utilit* or cost minimization or cost or costs or costing or (economic adj5 model*) or economics).tw.
18. 11 or 12 or 13 or 14 or 15 or 16 or 17
19. 10 and 18
20. limit 19 to english language
21. limit 20 to animals
22. limit 20 to (animals and humans)
23. 21 not 22
24. 20 not 23
25. limit 24 to (editorial or letter)
26. 24 not 25

**HTA Database**

1. exp Hepatitis C/di [Diagnosis]
2. Hepacivirus/
3. (hepatitis c or hcv or hepacivirus*).tw.
4. exp Hepatitis C Antigens/ or exp Hepatitis C Antibodies/ or exp Hepatitis C/
5. 2 or 3 or 4
6. Mass Screening/
7. (screen* or test*).tw.
8. 6 or 7
9. 5 and 8
10. 1 or 9
11. limit 10 to english language

**EMBASE**

1. exp hepatitis C/di [Diagnosis]
2. exp Hepatitis C virus/di [Diagnosis]
3. 1 or 2
4. exp hepatitis C/ or exp Hepatitis C virus/
5. exp hepatitis C antibody/
6. exp hepatitis C antigen/
7. (hepatitis c or hcv or hepacivirus*).tw.
8. 4 or 5 or 6 or 7
9. exp screening/
10. (screen* or test*).tw.
11. 9 or 10
12. 8 and 11
13. 3 or 12
14. exp economic evaluation/
15. exp economic aspect/
16. hidden markov model/
17. (economic evaluation* or cost benefit* or cost effective* or cost utilit* or cost minimization or cost or costs or costing or (economic adj5 model*) or economics).tw.
18. 14 or 15 or 16 or 17
19. 13 and 18
20. limit 19 to english language
21. limit 20 to animal studies
22. limit 20 to (human and animal studies)
23. 21 not 22
24. 20 not 23
25. limit 24 to (editorial or letter)
26. 24 not 25
27. limit 26 to conference abstract
28. 26 not 27

**Econlit**

(hepatitis c or hcv or hepacivirus*)
AND
(screen* or test*)

**Appendix B: CHEC List[1]**

| Item Number | CHEC-list |
|---|---|
| 1 | Is the study population clearly described? |
| 2 | Are competing alternatives clearly described? |
| 3 | Is a well-defined research question posed in answerable form? |
| 4 | Is the economic study design appropriate to the stated objective? |
| 5 | Is the chosen time horizon appropriate in order to include relevant costs and consequences? |
| 6 | Is the actual perspective chosen appropriate? |
| 7 | Are all important and relevant costs for each alternative identified? |
| 8 | Are all costs measured appropriately in physical units? |
| 9 | Are costs valued appropriately? |
| 10 | Are all important and relevant outcomes for each alternative identified? |
| 11 | Are all outcomes measured appropriately? |
| 12 | Are outcomes valued appropriately? |
| 13 | Is an incremental analysis of costs and outcomes of alternatives performed? |
| 14 | Are all future costs and outcomes discounted appropriately? |
| 15 | Are all important variables, whose values are uncertain, appropriately subjected to sensitivity analysis? |
| 16 | Do the conclusions follow from the data reported? |
| 17 | Does the study discuss the generalizability of the results to other settings and patient/client groups? |
| 18 | Does the article indicate that there is no potential conflict of interest of study researcher(s) and funder(s)? |
| 19 | Are ethical and distributional issues discussed appropriately? |

*Direct excerpt from publication

## Appendix C: Characteristics of Included Studies

| Author, Year, Country | Population | Model | Perspective | Comparators | Clinical Pathway | Time Horizon | Discount Rate | Outcome | Clinical Inputs | Prevalence Estimate | Adherence Estimate | Preference measurement | Included Cost Inputs | Assessment of Uncertainty | Currency (Year) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Drug Users | | | | | | | | | | | | | | | |
| **Castelnuovo[2], 2006, United Kingdom** | Hypothetical cohort of 1,000 people age 37 years old, based on data from the Trent HCV Study Cohort Database | CUA | Payer | Systematic case-finding (screening program) compared to no systematic case finding (no screening program). Treatment with PEGIFN and ribavirin in all diagnosed cases. | Testing or no testing (natural history of disease), positive or negative ELISA test, PCR test if positive ELISA test, diagnosis, treatment | Lifetime | Costs: 6%<br><br>Benefits: 1.5% | Costs and consequences of case-finding and no-case-finding, cost per life-year-gained, QALY | Prevalence HCV, Genotype distribution | Pooled estimate of HCV prevalence in intravenous drug users (Bird et al.): 49% (95% CI 38-61%) | Acceptance of testing rate for IDU population using ELISA test (Serfaty et al): 49%<br><br>Acceptance of testing rate for IDU population using PCR test (Irving et al): 39%<br><br>Acceptance of testing rate for IDU population using liver biopsy (Irving et al): 89.6% | EQ-5D (UK algorithm) from the HTA mild HCV Trial and cost-effectiveness model (reference) | ELISA test, communicating results, PCR, genotyping, liver biopsy, counselling and harm reduction, treatment, referral to treatment, annual cost by disease state, liver transplant, annual cost for liver transplant wait list, costs related to case-finding (health promotion information session, communication of results, referral, pre-test discussion) | Sensitivity Analysis (all parameters varied in one-way sensitivity analysis)<br><br>Probabilistic Sensitivity Analysis (Gender, alcohol use, ALT subgroups, relative risk, costs, transition probabilities, prevalence) | £ (2004) |
| **Helsper[3], 2012, Netherlands** | Drug Users | CUA | Payer | No screening program compared to “drug user campaign” which targeted drug users through addiction care centers | Screening campaign or no screening campaign, test or no test, positive or negative test result, diagnosis or no diagnosis, treatment or no treatment, response to treatment or no response to treatment | Lifetime | Costs: 4%<br><br>Benefits: 1.5% | Costs and consequences of screening strategies and no screening strategy, cost per life-year-gained, QALY | Distribution of fibrosis stage, patients eligible for treatment | Not reported | Referral rate: 71.43% | Not reported | Diagnostic tests and consultations before treatment, medication and diagnostic tests during treatment (by fibrosis stage), campaign costs (training, project organization, material and travel expenses, consultation costs) | Sensitivity Analysis<br><br>Probabilistic Sensitivity Analysis | € (2007) |

| Author, Year, Country | Population | Model | Perspective | Comparators | Clinical Pathway | Time Horizon | Discount Rate | Outcome | Clinical Inputs | Prevalence Estimate | Adherence Estimate | Preference measurement | Included Cost Inputs | Assessment of Uncertainty | Currency (Year) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Leal[4], 1999, United Kingdom** | Intravenous drug users in south and west health region of the UK. | CUA | Not reported | Screening program or no screening program for intravenous drug users who use the health care system | Screening or no screening, acceptance or test or no acceptance of test, ELISA and PCR testing, biopsy or no biopsy to confirm, diagnosis, treatment or no treatment, response or no response to treatment. | 50 years | Costs: 6%<br><br>Benefits: 6% | Costs and consequences of screening strategies and no screening strategy, cost per life-year-gained, QALY | Stage of liver disease, complications, response to treatment, costs | HCV positive: 60% | Acceptance of testing: 80%<br><br>Failure to complete liver biopsy: 45%<br><br>Acceptance of initial treatment: 50% | From Bennett et al. | Screening and diagnosis (counselling, ELISA, PCR, liver biopsy), treatment, adverse events, monitoring (PCR negative result, mild disease, treatment monitoring), cost of screening program | Sensitivity analysis (distribution of liver disease stage, acceptance of treatment, proportion of sustained treatment response, utilities, disease progression, discounting, cost of IFNa, cost of liver biopsy, total program cost) | £ (1997) |
| **Stein[5], 2003, United Kingdom** | Hypothetical cohort of 246,636 attending a genito-urinary clinic annually (61% former intravenous drug users) | CUA | Payer | Screening program of former intravenous drug users attending a genito-urinary clinic compared to no screening program | Screening or no screening, positive or negative ELISA test, PCR test if positive ELISA test, offered liver biopsy, diagnosis, treatment | 50 years | Costs: 6%<br><br>Benefits: 1.5% | Costs and consequences of screening strategies and no screening strategy, cost per life-year-gained, QALY | Sensitivity and specificity of ELISA and PCR, proportion with mild, moderate or severe disease, complications, progression to cirrhosis, decompensated cirrhosis, hepatic carcinoma, death, transplant, second transplant | HCV prevalence at genito-urinary clinic (Goldberg et al): 1.5% | Acceptance of testing rate for individuals using ELISA test (Serfaty et al): 49%<br><br>Acceptance of testing rate for individuals using PCR test (Clinician Advisory Group): 100%<br><br>Acceptance of testing rate for individuals using biopsy (Jowett et al): 77%<br><br>Acceptance of treatment (Jowett et al): 50% | VAS for HCV patients (Cotler et al) | ELISA, PCR, Counselling, liver biopsy, medical visits, medications, inpatient day, hepatocellular carcinoma inpatient cost, chronic HCV infection, hepatic encephalopathy inpatient, variceal bleed inpatient, liver transplant | Sensitivity Analysis (all parameters in one-way sensitivity analysis)<br><br>Scenario Analysis (10% and 20% of those who present are screened) | £ (2001) |
| **Stein[6], 2004, United Kingdom** | Hypothetical cohort of former intravenous drug users | CUA | Payer | Screening program of former intravenous drug users compared to no screening program. | Screening or no screening, positive or negative ELISA test, PCR test if positive ELISA | 50 years | Costs: 6%<br><br>Benefits: 1.5% | Costs and consequences of screening strategies and no screening strategy, cost per life-year- | Sensitivity and specificity of ELISA and PCR, probabilities of cirrhosis, decompensated cirrhosis | HCV of individuals who go to drug services (Department of Health): 32% | Adherence to treatment (Barbaro et al): 100% | VAS for HCV patients (Cotler et al) | Doctor appointment, out-patient and in-patient visits, treatment, hospitalization | Sensitivity Analysis (current intravenous drug users, prevalence of HCV, acceptance of ELISA or PCR, | £ (2002) |

| Author, Year, Country | Population | Model | Perspective | Comparators | Clinical Pathway | Time Horizon | Discount Rate | Outcome | Clinical Inputs | Prevalence Estimate | Adherence Estimate | Preference measurement | Included Cost Inputs | Assessment of Uncertainty | Currency (Year) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | test, diagnosis, treatment, cirrhosis, decompensated cirrhosis, hepatocellular carcinoma, transplant, death | | | gained, QALY | hepatocellular carcinoma, liver transplant, second liver transplant, death, overdose mortality | | | | s, liver transplant | sensitivity and specificity of ELISA or PCR in one-way sensitivity analysis) | |
| **Tramarin[7], 2008, Netherlands** | Hypothetical cohort of intravenous drug users living in the Veneto Region in 2007 | CUA | Societal | Screening program of intravenous drug users compare to no screening. | "Patients faced annual probabilities of progression, complication of cirrhosis, mortality risks from decompensated cirrhosis and hepatocellular carcinoma. Patient with decompensated cirrhosis could receive an orthotopic liver transplant…We developed an epidemiological model of HCV infection which includes acquisition of infection, clinical presentation (symptomatic and asymptomatic) probability of persistence and risk of progression to end stage of liver disease." | Lifetime | Costs: 3%<br><br>Benefits: 3% | Costs and consequences of screening strategies and no screening strategy, cost per life-year-gained, QALY | Probabilities of symptomatic and asymptomatic HCV, spontaneous clearance, progression, cirrhosis, decompensated cirrhosis, hepatocellular carcinoma, death, and liver transplant | Randomized control trial HCV prevalence estimate of symptomatic and asymptomatic (Manns et al): 0.16, 0.84 | Complete compliance | A variety of literature-based sources were used to provide utility data (Short Form 36 Health Survey data). | Screening, annual costs (screening, cirrhosis, transplantation in hepatocellular carcinoma), monthly costs (acute therapy, chronic therapy) | Sensitivity Analysis (prevalence of genotypes 1 and 4) | € (Not Reported) |
| **High Risk** | | | | | | | | | | | | | | | |
| **Batra[8], 2001, England** | Real cohort of 1879 people in West Kent, England, tested for HCV in 1998/1999 (former drug users, received clotting factors, | CEA | Payer | No screening and liver transplant compared to opportunistic screening and treatment | Screening or no screening, test positive or negative, liver biopsy or no biopsy, biopsy positive or negative, diagnosis and | Not reported | Costs: 6%<br><br>Benefits: 6% | Screening effectiveness, number needed to screen to prevent 1 patient developing cirrhosis, marginal cost | Distribution of fibrosis stage, sensitivity and specificity of tests, risk of developing cirrhosis | 8% | Acceptance of treatment given diagnosis: 61% | Not reported | Medications, tests | Sensitivity analysis (proportion of high risk people accepting testing, proportion who receive RNA test, proportion who accept liver | £ (1999) |

| Author, Year, Country | Population | Model | Perspective | Comparators | Clinical Pathway | Time Horizon | Discount Rate | Outcome | Clinical Inputs | Prevalence Estimate | Adherence Estimate | Preference measurement | Included Cost Inputs | Assessment of Uncertainty | Currency (Year) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | long term hemodialysis, abnormal alanine aminotransferase, prior recipients of transfusion or organ transplants, exposed healthcare workers, children of HCV women) | | | | staging or no diagnosis and staging, treatment or no treatment | | | of preventing 1 case of cirrhosis, net present value of opportunistic HCV screening compared to liver transplant | | | | | | biopsy proportion who are Knodell >6, proportion who accept treatment requiring genotyping) | |
| **Lapane[9], 1998, United States** | Real cohort of patients (n=13,997) who self-referred for HCV screening were assessed based on risk factor and modeled (former IV drug use, sex with IV drug user, history of blood transfusion, age, gender, hemodialysis, hepatitis B vaccination, health care professional) | CEA | Not Reported | Comparing no screening with four screening strategies/models:<br>1. Screening only when predicated probability of infection exceeds 7%,<br>2. Screening only for individuals who have significant risk based on all questionnaire questions<br>3. Screening only using questions that did not carry stigma (no questions about drug use etc.)<br>4. Screening only for patients with elevated ALT levels | Not Reported | Not Reported | Not reported | Cost per case detected and average cost per 100 people screened | (Primary data collection) | Model 1: 20%<br>Model 2: 29%<br>Model 3: 25%<br>Model 4: 12% | Not reported | Not Reported | Average cost of testing (primary data collection) | Not Reported | USD (Not Reported) |
| **Liu[10], 2013, United States** | High risk individuals who are 40-74 years old (drug history use, blood transfusion before 1992, and multiple sexual partners) | CUA | Societal | No screening versus risk-factor guided screening | Screening or no screening, treatment with standard therapy, universal triple therapy or IL-28B-guided triple therapy | Lifetime | Costs: 3%<br><br>Benefits: 3% | Costs and consequences of screening strategies and no screening strategy, cost per life-year-gained, QALY | Mortality rates (NHANESIII data),disease progression rates (Liu et al) | Various estimates (by sex and race) calculated using the National Health and Nutrition Examination Survey (2001-2008) | Acceptance of treatment for those with fibrosis stage F0-F1: 30%<br><br>Acceptance of treatment for those with fibrosis stage F2-F4: 39% | Derived from the Medical Expenditure Panel Survey | Screening (ELISA, RIBA and RNA tests, counselling, liver biopsy, FibroTest), drug and medical care related to treatment, and annual care by fibrosis stage | Deterministic sensitivity analysis (cohort age, HCV prevalence, screening-related factors, treatment-related factors)<br><br>Probabilistic Sensitivity Analysis (cohort characteristics, distribution of fibrosis stages, HCV status) | USD (2010) |

| Author, Year, Country | Population | Model | Perspective | Comparators | Clinical Pathway | Time Horizon | Discount Rate | Outcome | Clinical Inputs | Prevalence Estimate | Adherence Estimate | Preference measurement | Included Cost Inputs | Assessment of Uncertainty | Currency (Year) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Miners[11], 2014, United Kingdom** | Immigrants from the Indian subcontinent | CUA | Payer | No screening versus letter inviting people to opt-out and subsequent phone call to receive screening among those who did not opt-out | Screening or no screening | Lifetime | Costs: 3.5%<br><br>Benefits: 3.5% | Costs and consequences of screening strategies and no screening strategy, cost per life-year-gained, QALY | Probability of SVR in mild/moderate disease, SVR for compensated and decompensated cirrhosis, probability of leaving the UK | From study: 3.2% | Treatment referral and attendance: 45% | Derived from UK RCT of mild disease and a subsequent study of latter disease | Intervention cost, antiviral treatment, health-state-specific costs | Deterministic sensitivity analysis<br><br>Probabilistic Sensitivity Analysis | £ (2010) |
| **Nakamura[12], 2008, Japan** | Cohort of 42,538 high-risk individuals from 2003 to 2006 (showing a high level of aminotransferase, undergone major operation, or received a blood transfusion during child birth) | CEA | Payer | Screening program of high-risk individuals compared to no screening program. | Screening or no screening, diagnosis, treatment, cirrhosis, decompensated cirrhosis, death | Lifetime | Costs: 3%<br><br>Benefits: 3% | Costs and consequences of screening strategies and no screening strategy, cost per life-year-gained (not adjusted for quality of life) | Probability of compensated cirrhosis, decompensated cirrhosis, hepatocellular carcinoma, death | HCV prevalence per age group: 0.81%<br>40-49: 0.38%<br>50-59: 0.31%<br>60-69: 0.66%<br>>70: 1.60% | Acceptance of treatment (assumption) : 100% | Life expectancy | HCV antibody test, core antigen test, PCR test, combination therapy (inpatient and outpatient), post SVR (outpatient), chronic hepatitis (outpatient), compensated cirrhosis (outpatient), decompensated cirrhosis (inpatient and outpatient), hepatocellular carcinoma (inpatient and outpatient) | Sensitivity analysis (treatment effectiveness, transition probabilities, infection rates of HCV, price of drugs) | $ (2007) |
| **Pregnant** | | | | | | | | | | | | | | | |
| **Plunkett[13], 2004, United States** | Hypothetical cohort of low-risk pregnant women | CUA | Payer | Screening program of low-risk pregnant women (treatment, treatment and elective C-section) compared to no screening. | Screening or no screening, diagnosis, treatment, cirrhosis, decompensated cirrhosis, transplant, death | Lifetime | Costs: 3%<br><br>Benefits: 3% | Costs and consequences of screening strategies and no screening strategy, cost per life-year-gained, QALY | Sensitivity and specificity of ELISA and PCR, probability of mild to moderate hepatitis for mother and child, cirrhosis, decompensated cirrhosis, hepatocellular cancer, transplant, death, response to treatment, delivery (elective, emergent, vaginal), transmission (elective, | HCV infection (Centers for disease control and Prevention, Alter et al, Silverman et al): 1% | Receive treatment if screened (McHutchinson et al): 70% | A variety of literature-based sources were used to provide utility data (Short Form 36 Health Survey data). Pregnancy delivery utilities (assumption) | Counselling, ELISA, PCR, genotype, delivery cost, annual cost (cirrhosis, decompensated cirrhosis, hepatocellular cancer, transplant, treatment, delivery) | Sensitivity Analysis (all parameters in one-way analysis and HCV transmission and prevalence in multi-way) | USD (2003) |

| Author, Year, Country | Population | Model | Perspective | Comparators | Clinical Pathway | Time Horizon | Discount Rate | Outcome | Clinical Inputs | Prevalence Estimate | Adherence Estimate | Preference measurement | Included Cost Inputs | Assessment of Uncertainty | Currency (Year) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | emergent, vaginal) | | | | | | |
| **Selvapatt[14], 2015, United Kingdom** | Pregnant women attending antenatal clinics in St Mary's Hospital in London between November 1 2003 and March 2013 | CUA | Payer | Screening of pregnant women compared to no screening. | Screening or no screening, diagnosis, treatment (base, all on sofosbuvir, sofosbuvir after RBV failure), fibrosis stages cirrhosis, decompensated cirrhosis, transplant, death | Lifetime | Costs: 3.5%<br><br>Benefits: 3.5% | Costs and consequences of screening strategies and no screening strategy, cost per life-year-gained, QALY | Probability of HCV infection, fibrosis stage transitions, SVR, liver transplant decompensated cirrhosis, hepatocellular carcinoma | From study: 0.38% | Assumption: 100% | Not reported | Testing, antibody and confirmatory test, genotyping, liver biopsy, antiviral therapy | Sensitivity Analysis (increasing and decreasing age a diagnosis by 5 years, adjusting SVR for RBV, treatment for all newly diagnosed patients, prevalence)<br><br>Scenario analysis (sofosbuvir as initial treatment, or sofosbuvir after failure with RBV) | £ (2013) |
| **Urbanus[15], 2013, Netherlands** | Hypothetical cohort of all pregnant women | CEA | Payer | Screening of pregnant women over 31 years of age compared to no screening. | Screening or no screening, positive or negative for HCV, transition through stages of cirrhosis, decompensated cirrhosis, hepatocellular carcinoma, liver transplant, or die | Lifetime | Costs: 4%<br><br>Benefits: 1.5% | Costs and life years of screening pregnant women, cost per life-year gained | Probability of HCV infections, successful treatments, new protease inhibitor by genotype, standard of care by genotype possible future regimen by genotype, transition to cirrhosis, decompensated cirrhosis, hepatocellular carcinoma, liver transplant, death | Prevalence estimate of all women (Lindenburg et al): 0.2% | Not Reported | Life years | Anti-body HCV test, RNA-test, chronic infection (per year), New protease inhibitor by genotype, standard of care by genotype possible future regimen by genotype, costs related to disease progression (decompensated cirrhosis, hepatocellular carcinoma, liver transplant, after liver transplant) | Sensitivity Analysis (all parameters in one-way analysis)<br><br>Probabilistic Sensitivity Analysis (all transition probabilities) | € (2011) |
| **Urbanus,[15] 2013, Netherlands** | Hypothetical cohort of first-generation non-Western pregnant women | CEA | Payer | Screening of pregnant women 29 for first-generation non-western women to no screening. | Screening or no screening, positive or negative for HCV, transition through stages of cirrhosis, decompensated | Lifetime | Costs: 4%<br><br>Benefits: 1.5% | Costs and life years of screening pregnant women, cost per life-year gained | Probability of HCV infections, successful treatments, new protease inhibitor by genotype, standard of care by genotype possible future | Prevalence estimate of first-generation non-western pregnant women (Lindenburg et al): 0.43% | Not Reported | n/a | Anti-body HCV test, RNA-test, chronic infection (per year), New protease inhibitor by genotype, | Sensitivity Analysis (all parameters in one-way analysis)<br><br>Probabilistic Sensitivity Analysis (all | € (2011) |

| Author, Year, Country | Population | Model | Perspective | Comparators | Clinical Pathway | Time Horizon | Discount Rate | Outcome | Clinical Inputs | Prevalence Estimate | Adherence Estimate | Preference measurement | Included Cost Inputs | Assessment of Uncertainty | Currency (Year) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | cirrhosis, hepatocellular carcinoma, liver transplant, or die | | | | regimen by genotype, transition to cirrhosis, decompensated cirrhosis, hepatocellular carcinoma, liver transplant, death | | | | standard of care by genotype possible future regimen by genotype, costs related to disease progression (decompensated cirrhosis, hepatocellular carcinoma, liver transplant, after liver transplant) | transition probabilities) | |
| **Prisoners** | | | | | | | | | | | | | | | |
| **He [16], 2016, United States** | Hypothetical cohort of prisoners | CUA | Societal | Screening of prisoners (current, and onto reception into prison for 1, 5, or 10 years) | No screening, 1-time risk-based screening of those incarcerated and entrants who are current or former IDU for 1 year, 1-time opt-out screening of those incarcerated and entrants for 1 year with opt-out screening of entrants for 1 year, 5 years, or 10 years | 30 years | Not reported | Costs and consequences of screening strategies and no screening strategy, cost per life-year-gained, QALY; both for those within the prison and that affects on the general population | Probability of transmission (with or without known HCV status), development of chronic HCV, rate of progression through each stage of fibrosis, probabilities of cirrhosis, decompensated cirrhosis hepatocellular carcinoma, liver transplant, death, | Not reported | Not reported | Quality of life weights (0-1) that are adjusted by age and sex | Screening (antibody and RNA), genotype testing, anti-viral treatment, cirrhosis, decompensated cirrhosis, hepatocellular carcinoma, liver transplant | Sensitivity analysis (all key model parameters, discounted drugs) | USD (2014) |
| **Sutton[17], 2006, United Kingdom** | Hypothetical cohort of prisoners on reception into prison | CEA | Payer | Case-finding (screening program) compared to no Case finding (no screening program). | Three scenarios of verbal screening questions or no questions, ELISA and if positive then PCR, only screening followed. No treatment included. | Through testing (no markov model) | Costs: 3.5%<br><br>Benefits: 3.5% | Costs and consequences of case-finding and no-case-finding, cost per HCV infection identified | Identify as HCV positive (whether have positive test or not), report intravenous drug use, sensitivity and specificity of ELISA and PCR | HCV infection in first year of being an intravenous drug user (Sutton et al): 16.08%<br><br>HCV infection in subsequent years of being an intravenous drug user (Suttong et al): 5.26% | Acceptance of testing rate for prisoners using ELISA test (Stein et al): 85%<br><br>Acceptance of testing rate for prisoners using PCR (assumption) : 100% | Not applicable | Nurse and doctor wages, ELISA and PCR test | Sensitivity analysis (all parameters in one-way sensitivity analysis) | £ (2004) |
| **Sutton[18],** | Hypothetical | CUA | Payer | Screening | Screening or no | 80 years | Costs: | Costs and | Sensitivity and | HCV prevalence | Acceptance | HAI from a | Various | Sensitivity | £ |

| Author, Year, Country | Population | Model | Perspective | Comparators | Clinical Pathway | Time Horizon | Discount Rate | Outcome | Clinical Inputs | Prevalence Estimate | Adherence Estimate | Preference measurement | Included Cost Inputs | Assessment of Uncertainty | Currency (Year) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **2008, United Kingdom** | cohort of prisoners on reception into prison | | | program of prisoners on reception into prison compare to no screening program. | screening, cirrhosis, decompensated cirrhosis, hepatocellular carcinoma, liver transplant, death | | 3.5%<br><br>Benefits: 3.5% | consequences of screening strategies and no screening strategy, cost per life-year-gained, QALY | specificity of ELISA, probabilities of cirrhosis, decompensated cirrhosis hepatocellular carcinoma, liver transplant, death, overdose mortality, | in prisoners (Weild et al): 7% | of testing rate for prisoners using ELISA test (Skipper et al, Horne et al): 10.25%<br><br>Acceptance of testing rate for community using ELISA test (Serfaty et al): 49%<br><br>Acceptance of testing rate for prisoners using PCR test (Horne et al): 92%<br><br>Acceptance of testing rate for community using PCR test (Castelnuovo et al): 39% | previous study (Castelnuovo et al) | interviews and communicating results, ELISA, PCR, genotyping, offering treatment, treatment | Analysis (all parameters varied in one-way sensitivity analysis)<br><br>Scenario analysis (Discount rates, utilities)<br><br>Probabilistic Sensitivity Analysis (all parameters) | (2004) |
| **Birth Cohort** | | | | | | | | | | | | | | | |
| **Coffin[19], 2012, United States** | Hypothetical cohort of individuals born between 1945-1965 | CUA | Societal | No screening program compared to screening program for those born between1945-1965 and living in the United States | Testing or no testing (natural history of disease), positive of negative test, positive or negative PCR test, Referral or no referral to treatment, diagnosis, treatment, treatment failure or response | Lifetime | Costs: 3%<br><br>Benefits: 3% | Costs and consequences of screening strategies and no screening strategy, cost per life-year-gained, QALY | Distribution of fibrosis stage at time of diagnosis, rate of progression through each stage of fibrosis, spontaneous presentation outside screening, rates of sustained viral response | Proportion of general US adult population HCV positive: 0.16% (range: 0.13-0.20%) | Assumption that 15% of the population born between 1945-1965 would be screened, based on 5-60% uptake of screening (Bassett et al.). | A variety of literature-based sources were used to provide utility data (Short Form 36 Health Survey data). | HCV antibody screening, RNA polymerase chain reaction test cost, Telaprevir-based therapy cost, boceprevir-based therapy costs, physician costs, disease management cots, and liver transplant and management costs | Sensitivity Analysis (all parameters varied in one-way sensitivity analysis )<br><br>Scenario Analysis (varying all parameters to be unfavorable)<br><br>Probabilistic Sensitivity Analysis (all parameters varied) | USD (2010) |

| Author, Year, Country | Population | Model | Perspective | Comparators | Clinical Pathway | Time Horizon | Discount Rate | Outcome | Clinical Inputs | Prevalence Estimate | Adherence Estimate | Preference measurement | Included Cost Inputs | Assessment of Uncertainty | Currency (Year) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Liu[10], 2013, United States** | Individuals who are 40-74 years old as of ? | CUA | Societal | No screening versus birth-cohort screening program | Screening or no screening, treatment with standard therapy, universal triple therapy or IL-28B-guided triple therapy | Lifetime | Costs: 3%<br><br>Benefits: 3% | Costs and consequences of screening strategies and no screening strategy, cost per life-year-gained, QALY | Mortality rates (NHANESIII data),disease progression rates (Liu et al) | Various estimates (by sex and race) calculated using the National Health and Nutrition Examination Survey (2001-2008) | Acceptance of treatment for those with fibrosis stage F0-F1: 30%<br><br>Acceptance of treatment for those with fibrosis stage F2-F4: 39% | Derived from the Medical Expenditure Panel Survey | Screening (ELISA, RIBA and RNA tests, counselling, liver biopsy, FibroTest), drug and medical care related to treatment, and annual care by fibrosis stage | Sensitivity analysis (cohort age, HCV prevalence, screening-related factors, treatment-related factors)<br><br>Probabilistic Sensitivity Analysis (cohort characteristics, distribution of fibrosis stages, HCV status) | USD (2010) |
| **McEwan[20], 2013, United States** | Individuals born between 1945-1965 | CUA | Payer | Birth cohort screening compared to risk-based screening (status quo) | Risk based testing or birth cohort based testing, HCV positive or negative, diagnosis, treatment or no treatment | Lifetime | Costs: 3.5%<br><br>Benefits: 3.5% | Costs and consequences of screening strategies and no screening strategy, cost per life-year-gained, QALY | Distribution of fibrosis stage (economic model by McGarry et al.) | Assumption that 1.77% of population tests positive for HCV | Acceptance of Screening: 91.21% | Derived from a variety of sources | Drug and medical care related to treatment and management, cost of testing | Not clear what parameters were assessed for uncertainty or approach | USD (Not reported) |
| **McGarry[21], 2012, United States** | Birth Cohort: individuals born between 1946-1970 with no HCV diagnosis | CUA and CEA | Payer | Birth cohort screening compared to risk-based screening (status quo) | Screening or no screening, HCV positive or HCV negative, diagnosis or no diagnosis, treatment or no treatment | Lifetime | Costs: 3%<br><br>Benefits: 3% | Cases of advanced liver disease avoided, HCV deaths averted, QALY | Disease progression (model by Davis et al.), mortality (U.S. population averages reported in Arias et al.), proportion of population screened (administrative data) | Not reported | Acceptance of treatment over 5 years: 100% | Derived from a variety of literature sources | Screening costs (ELISA test, PCR test, biopsy), cost of diagnosis, cost of treatment, cost of monitoring, cost by annual health state, | Sensitivity Analysis (percentage of birth cohort screened, treatment eligibility, treatment rates, efficacy rates, time horizons of 10 and 25 years, progression rates between fibrosis stages, proportion of non-progressing fibrosis) | USD (2010) |
| **Nakamura[12], 2008, Japan** | Cohort of 99,001 individuals living in Japan age 40-70, from 2003 to 2006 | CEA | Payer | Screening program of birth cohort (40-70 years old) compared to no screening program. | Screening or no screening, diagnosis, treatment, cirrhosis, decompensated cirrhosis, death | Lifetime | Costs: 3%<br><br>Benefits: 3% | Costs and consequences of screening strategies and no screening strategy, cost per life-year-gained (not adjusted for quality of life) | Probability of compensated cirrhosis, decompensated cirrhosis, hepatocellular carcinoma, death | HCV prevalence per age group: 0.36%<br>40-49: 0.15%<br>50-59: 0.18%<br>60-69: 0.36%<br>>70: 0.61% | Acceptance of treatment (assumption) : 100% | Life expectancy | HCV antibody test, core antigen test, PCR test, combination therapy (inpatient and outpatient), post SVR (outpatient), chronic hepatitis (outpatient), | Sensitivity analysis (treatment effectiveness, transition probabilities, infection rates of HCV, price of drugs in one-way sensitivity analysis) | $ (Costs from Japan, possibly changed to USD) (2007) |

| Author, Year, Country | Population | Model | Perspective | Comparators | Clinical Pathway | Time Horizon | Discount Rate | Outcome | Clinical Inputs | Prevalence Estimate | Adherence Estimate | Preference measurement | Included Cost Inputs | Assessment of Uncertainty | Currency (Year) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | | compensated cirrhosis (outpatient), decompensated cirrhosis (inpatient and outpatient), hepatocellular carcinoma (inpatient and outpatient) | | |
| **Rein[22], 2012, United States** | Hypothetical cohort of individuals born between 1945 and 1965 that annually attend primary care provider | CUA | Societal | Screening program of birth cohort (born 1945-1965) treated with either PEG-IFN+R alone or PEG-IFN+R and direct acting anti-viral compared to no screening program. | Screening or no screening, diagnosis, treatment, cirrhosis, decompensated cirrhosis, transplant, death | Lifetime | Costs: 3%<br><br>Benefits: 3% | Costs and consequences of screening strategies and no screening strategy, cost per life-year-gained, QALY | Probability of refusing treatment, genotype, cirrhosis, decompensated cirrhosis, hepatocellular carcinoma, transplant, death | Stratified by age, sex, race/ ethnicity, history of intravenous drug use, and history of HCV (values unknown) | Acceptance of screening if intervention offered (Honeycutt et al): 91%<br><br>Acceptance of screening if intervention not offered (Honeycutt et al): 18%<br><br>Receive treatment after positive test (Falck et al and Zeuzem et al): 40.8% | A variety of literature-based sources were used to provide utility data (Short Form 36 Health Survey data and Standard Gamble). | Screening, receiving results, treatment per genotype, METAVIR stages, cirrhosis, decompensated cirrhosis, hepatocellular carcinoma, liver transplant | Probabilistic Sensitivity Analysis (QALY losses, discount rate, SVR for genotypes, proportion that is genotype 1, cost of screening and standard treatment, costs and effectiveness of treatment) | USD (2009) |
| **Ruggeri[23], 2013, Italy** | Hypothetical cohort of healthy individuals 35-65 years old | CUA | Payer | Screening program of healthy individuals (≥35 years old) compared to no screening | Screening or no screening, diagnosis, treatment, cirrhosis, decompensated cirrhosis, hepatocellular carcinoma, transplant, death | 40 years | Costs: 3.5%<br><br>Benefits: 3.5% | Costs and consequences of screening strategies and no screening strategy, cost per life-year-gained, QALY | Prevalence of HCV in each age group, efficacy of treatments, distribution of genotypes | HCV prevalence per age group (Ansaldi et al):<br>15-30: 2%<br>31-45: 6%<br>46-60: 7%<br>>60: 5% | Not Reported | HUI (Nakamura et al, Sullivan et al, Siebert et al) | ELISE and PCR cost, hepatology consultation, laboratory tests, ultrasounds, drugs, abdominal echotomagraphy, esophageal duodenoscopy, esofagogastroduodenoscopy, hepatic ecography, tumor markers, computed tomography | Sensitivity Analysis (discount rate, costs, genotype, effectiveness, and utility in one way sensitivity analysis)<br><br>Probabilistic Sensitivity Analysis (all parameters) | € (2009) |
| **Wong[24], 2014,** | Hypothetical cohort of | CUA | Payer | Screen and Treat with pegylated | Screening or no screening, | Lifetime | Costs: 5% | Costs and consequences | Distribution of fibrosis stages | Prevalence estimate of HCV | Acceptance of testing | HUI (Mark 2) for patients with | Annual costs of early late | Scenario Analysis | CAD (2012) |

| Author, Year, Country | Population | Model | Perspective | Comparators | Clinical Pathway | Time Horizon | Discount Rate | Outcome | Clinical Inputs | Prevalence Estimate | Adherence Estimate | Preference measurement | Included Cost Inputs | Assessment of Uncertainty | Currency (Year) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Canada** | individuals 25-64 years old currently living in Canada | | | interferon plus ribavirin, and Screen and Treat with direct-acting antiviral agents, compared to no screening | positive or negative for HCV, transition through stages of fibrosis and cirrhosis, liver transplant, or die | | Benefits: 5% | of screening strategies and no screening strategy, cost per life-year-gained, QALY | per age group, Probability of annual fibrosis progression, Probability of annual cirrhosis progression, Mortality, probability of treatment by fibrosis and viral genotype, combination therapy of telaprevir (treatment naïve cohort), PEG-IFN and ribavirin therapy for genotype 1 through 6, Retreatment of genotype 1 for telaprevir –based combination therapy | prevalence in age groups (Rotermann et al.): 0.5% (95%CI 0.3-0.9%) | rate for age group (Yeung et al): 91% | early and late stage HCV | and pre-death HCV phase, transplant and post-transplant cost, anti-viral therapies, adverse events, anti-HCV test, HCV RNA test | (prevalence, age ranges)<br><br>Sensitivity Analysis (screening, HCV, and treatment parameters)<br><br>Probabilistic Sensitivity Analysis (screening, HCV, and treatment parameters) | |
| **General Population** | | | | | | | | | | | | | | | |
| **Coffin[19], 2012, United States** | Hypothetical cohort of general adult population screening (age 20-69) | CUA | Societal | No screening program compared to screening program for adults living in the United States | Testing or no testing (natural history of disease), positive of negative test, positive or negative PCR test, Referral or no referral to treatment, diagnosis, treatment, treatment failure or response | Lifetime | Costs: 3%<br><br>Benefits: 3% | Costs and consequences of screening strategies and no screening strategy, cost per life-year-gained, QALY | Distribution of fibrosis stage at time of diagnosis, rate of progression through each stage of fibrosis, spontaneous presentation outside screening, rates of sustained viral response | Proportion of general US adult population HCV positive: 0.16% (range: 0.13-0.20%) | Assumption that 15% of the general population would be screened, based on 5-60% uptake of screening (Bassett et al.). | A variety of literature-based sources were used to provide utility data (Short Form 36 Health Survey data). | HCV antibody screening, RNA polymerase chain reaction test cost, Telaprevir-based therapy cost, boceprevir-based therapy costs, physician costs, disease management cots, and liver transplant and management costs | Sensitivity Analysis (all parameters varied in one-way sensitivity analysis )<br><br>Scenario Analysis (varying all parameters to be unfavorable)<br><br>Probabilistic Sensitivity Analysis (all parameters varied) | USD (2010) |
| **Eckman[25], 2013, United States** | Hypothetical cohort of individuals 46.2 years old, with a mean HCV infection duration of 20.7 | CUA | Payer | No screening program compared to screening program for asymptomatic adults living in the United States | Screen and treat or no screening; male or female; Caucasian, African American or | Lifetime | Costs: 3%<br><br>Benefits: 3% | Costs and consequences of screening strategies and no screening strategy, cost per life-year- | Development of hepatocellular carcinoma, fibrosis progression | HCV positive: 0.014 (0.013-0.019) | Not reported | Standard gamble utility assessment of HCV patients, from meta-regression (McLernon et al.) | Cost by disease state, cost of hepatocellular carcinoma (with or without liver transplant), | Sensitivity analysis (all variables)<br><br>Probabilistic Sensitivity Analysis (all | USD (2011) |

| Author, Year, Country | Population | Model | Perspective | Comparators | Clinical Pathway | Time Horizon | Discount Rate | Outcome | Clinical Inputs | Prevalence Estimate | Adherence Estimate | Preference measurement | Included Cost Inputs | Assessment of Uncertainty | Currency (Year) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | years | | | | Hispanic; EIA positive or negative; PCR positive or negative; if negative PCR, RIBBA positive or negative; accepts or declines treatment; diagnosis | | | gained, QALY | | | | | medication cost, lab test costs, doctors office visit costs, cost of screening, cost of treatment | parameters)<br><br>Deterministic Sensitivity Analysis | |
| **Helsper[3], 2012, Netherlands** | General population | CUA | Payer | No screening program compared to "general campaign" consisting of local radio, newspaper and print advertising<br><br>AND<br><br>No screening program compared to "support campaign" consisting of local radio, newspaper and print advertising and availability of information sessions for general practitioners | Screening campaign or no screening campaign, test or no test, positive or negative test result, diagnosis or no diagnosis, treatment or no treatment, response to treatment or no response to treatment | Lifetime | Costs : 4%<br><br>Benefits: 1.5% | Costs and consequences of screening strategies and no screening strategy, cost per life-year-gained, QALY | Distribution of fibrosis stage, patients eligible for treatment, probability of successful treatment | Not reported | General Campaign: Not Reported<br><br>Support Campaign: Referral rate: 70% | Not reported | Diagnostic tests and consultations before treatment, medication and diagnostic tests during treatment (by fibrosis stage), campaign costs (organization, materials, information session costs, brochure costs, GP support costs – for Support campaign only) | Sensitivity Analysis<br><br>Probabilistic Sensitivity Analysis | € (2007) |
| **Kim[26], 2015, United States** | Hypothetical cohort (n=10,000) of 40 year old adults in Egypt | CUA | Societal | Screening program using ELISA then PCR, compared to No screening | Screening, test positive or negative, treatment, chronic HCV, recovered, cirrhosis, decompensated cirrhosis hepatocellular carcinoma, liver transplant, death, | 40 years | Costs: 3%<br><br>Benefits: 3% | Costs and consequences of screening strategies and no screening strategy, cost per life-year-gained, QALY | Sensitivity and specificity of ELISA and PCR, probabilities of chronic HCV, recovered, cirrhosis, decompensated cirrhosis hepatocellular carcinoma, liver transplant, death | HCV prevalence in general population in Egypt: 4.1-39.4% | Receive treatment after positive test (Piton et al): 21.5% | A variety of literature-based sources were used to provide utility data (Short Form 36 Health Survey data). (Singer et al 2001) | ELISA, PCR, genotyping, annual costs (HCV, chronic HCV, cirrhosis, decompensated cirrhosis, transplant, hepatocellular carcinoma), treatment (dual-therapy, and triple therapy), productivity | Sensitivity Analysis (time horizon, age cohort, progression, prevalence, adherence, utility)<br><br>Scenario analysis (treatment in government vs private hospital, dual vs triple therapy, screening only | USD (2014) |

| Author, Year, Country | Population | Model | Perspective | Comparators | Clinical Pathway | Time Horizon | Discount Rate | Outcome | Clinical Inputs | Prevalence Estimate | Adherence Estimate | Preference measurement | Included Cost Inputs | Assessment of Uncertainty | Currency (Year) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | | loss | males or females or both) | |
| **Singer[27], 2001, United States** | Hypothetical cohort of adults who attend a regular check-up with their primary health care provider | CUA | Societal | Screening program using ELISA then PCR, or only PCR, compared to No screening | Screening or no screening, positive or negative ELISA test, PCR test if positive ELISA test, diagnosis, treatment, cirrhosis, decompensated cirrhosis, hepatocellular carcinoma, transplant, death | Not Reported | Costs: 3%<br><br>Benefits: 3% | Costs and consequences of screening strategies and no screening strategy, cost per life-year-gained, QALY | Sensitivity and specificity of ELISA and PCR, probabilities of cirrhosis, successfully treated, decompensated cirrhosis hepatocellular carcinoma, liver transplant, death, relapse, response to treatment | HCV prevalence in general population (Alter et al): 9% | Receive treatment after positive test (Piton et al): 20% | A variety of literature-based sources were used to provide utility data (Short Form 36 Health Survey data). | Liver biopsy, liver profile, ultrasound, drugs, outpatients, missed work, ELISA, PCR, genotyping, annual costs (HCV, cirrhosis, decompensated cirrhosis, transplant, hepatocellular carcinoma) | Sensitivity Analysis (all parameters in one-way sensitivity analysis and two-way with parameters that had largest impact in one-way) | USD (2001) |
| **Other Populations** | | | | | | | | | | | | | | | |
| **Brett-Major[28], 2016, United States** | Random sample of 1000 recently deployed military personnel | CA | Department of Defense | Screening program using EIA then recombinant immunoblot assay (RIBA), or only EIA, compared to No screening | Screening or no screening, positive or negative EIA test, RIBA test, if positive diagnosis then treatment. | Not reported | Not reported | Total costs | Sensitivity and specificity of EIA and RIBA | Seroprevalence data from study: 0.16% | Not reported | Not applicable | Screening tests, treatment including sofosbruvir | Sensitivity analysis (cost, prevalence) | Not reported |
| **Honeycutt[29], 2007, United States** | Adults who present at a public STD clinic | CEA | STD Clinic Perspective | No Screening for HCV compared to screening for HCV in adults who present at a public STD clinic | Not Reported | Not reported | Not Reported | Cost per positive test | Proportion of positive testers who return to clinic, proportion of negative testers who return to clinic | Drug users: 57% (44-69%)<br><br>Men over 40 with 100+ sexual partners: 16% (6.7-25)<br><br>Men over 40 with <100 sexual partners: 2.0% (1.2-2.8%)<br><br>Women over 40 years old: 0.9% (0.2-1.7) | Not reported | Not applicable | Staff compensation, cost for EIA test, cost for RIBA test | Sensitivity analysis (cost, prevalence) | USD (2006) |
| **Josset[30], 2004, France** | Subgroups who have a history of gastroscopy, have had contact with an infected person, have a history of invasive procedure, history of colonoscopy or | CEA | Not reported | Comparing reference screening (of high risk individuals who either had a blood transfusion before 1991, or are drug users) with screening of people who have a history of | Patient were screened, and were either positive or negative for HCV | Not Reported | Not Reported | Cost per positive test | Positive serology tests | Not reported | Not Reported | Not Reported | Physician fees (consultation), test costs (ELISA, blood sample) | Sensitivity Analysis (HCV seroprevalence, proportion of high-risk patients) | € (1997) |

| Author, Year, Country | Population | Model | Perspective | Comparators | Clinical Pathway | Time Horizon | Discount Rate | Outcome | Clinical Inputs | Prevalence Estimate | Adherence Estimate | Preference measurement | Included Cost Inputs | Assessment of Uncertainty | Currency (Year) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | history of surgery | | | gastroscopy have had contact with an infected person, have a history of invasive procedure, history of colonoscopy or history of surgery | | | | | | | | | | | |
| **Orkin[31], 2016, United Kingdom** | Patients (≥18 years old) presenting to the ER between October 13-19 2014 and having blood drawn (n=2,118) | CEA | Not reported | No screening compared to screening (done in ER when other blood tests ordered) | Patient were screened, and were either positive or negative for HCV | Not reported | Not reported | Cost per case detected | Seroprevlanece taken from study | Prevalence from study: 1.84% | Not reported | Not reported | Cost per diagnosis | None | £ (unknown) |
| **Stein[5], 2003, United Kingdom** | Hypothetical cohort of 246,636 attending a genito-urinary clinic annually | CUA | Payer | Screening program of all individuals attending a genito-urinary clinic compared to no screening program | Screening or no screening, positive or negative ELISA test, PCR test if positive ELISA test, diagnosis, treatment | 50 years | Costs: 6%<br><br>Benefits: 1.5% | Costs and consequences of screening strategies and no screening strategy, cost per life-year-gained, QALY | Sensitivity and specificity of ELISA and PCR, proportion with mild, moderate or severe disease, complications, progression to cirrhosis, decompensated cirrhosis, hepatic carcinoma, death, transplant, second transplant | HCV prevalence at genito-urinary clinic (Goldberg et al): 1.5% | Acceptance of testing rate for individuals using ELISA test (Serfaty et al): 49%<br><br>Acceptance of testing rate for individuals using PCR test (Clinician Advisory Group): 100%<br><br>Acceptance of testing rate for individuals using biopsy (Jowett et al): 77%<br><br>Acceptance of treatment (Jowett et al): 50% | VAS for HCV patients (Cotler et al) | ELISA, PCR, Counselling, liver biopsy, medical visits, medications, inpatient day, hepatocellular carcinoma inpatient cost, chronic HCV infection, hepatic encephalopathy inpatient, variceal bleed inpatient, liver transplant | Sensitivity Analysis (all parameters in one-way and multi-way sensitivity analysis) | £ (2001) |
| **Tramarin[7], 2008, Netherlands** | Hypothetical cohort of individuals who had minor or major surgery in 2007 | CUA | Societal | Screening program of individuals who had minor or major surgery compared to no screening. | Screening or no screening, diagnosis, treatment, cirrhosis, decompensated cirrhosis, hepatocellular | Lifetime | Costs: 3%<br><br>Benefits: 3% | Costs and consequences of screening strategies and no screening strategy, cost per life-year-gained, QALY | Probabilities of symptomatic and asymptomatic HCV, spontaneous clearance, progression, cirrhosis, | Randomized control trial HCV prevalence estimate of symptomatic and asymptomatic (Manns et al): 0.16, 0.84 | Complete compliance | A variety of literature-based sources were used to provide utility data (Short Form 36 Health Survey data). | Screening, annual costs (screening, cirrhosis, transplantation in hepatocellular carcinoma), | Sensitivity Analysis (prevalence of genotypes 1 and 4) | € (Not Reported) |

| Author, Year, Country | Population | Model | Perspective | Comparators | Clinical Pathway | Time Horizon | Discount Rate | Outcome | Clinical Inputs | Prevalence Estimate | Adherence Estimate | Preference measurement | Included Cost Inputs | Assessment of Uncertainty | Currency (Year) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | carcinoma, transplant, death | | | | decompensated cirrhosis, hepatocellular carcinoma, death, and liver transplant | | | | monthly costs (acute therapy, chronic therapy) | | |

# Appendix D: Quality of Included Studies

| Author | Year | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | Total (/19) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Drug Users | | | | | | | | | | | | | | | | | | | | | |
| **Castelnuovo[2]** | **2006** | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 19 |
| **Helsper [3]** | **2012** | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 19 |
| **Leal[4]** | **1999** | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 17 |
| **Stein[5]** | **2003** | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 18 |
| **Stein [6]** | **2004** | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 18 |
| **Tramarin[7]** | **2008** | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 1 | 16 |
| High Risk | | | | | | | | | | | | | | | | | | | | | |
| **Batra[8]** | **2001** | 1 | 1 | 1 | 0 | 0 | 1 | 1 | 1 | 0 | 1 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 13 |
| **Lapane[9]** | **1998** | 1 | 1 | 1 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 1 | 0 | 0 | 8 |
| **Liu [10]** | **2013** | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 19 |
| **Miners[11]** | **2014** | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 19 |
| **Nakamura[12]** | **2008** | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 17 |
| Pregnant | | | | | | | | | | | | | | | | | | | | | |
| **Plunkett[13]** | **2004** | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 18 |
| **Selvapatt[14]** | **2015** | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 17 |
| **Urbanus[15]** | **2013** | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 18 |
| Prisoners | | | | | | | | | | | | | | | | | | | | | |
| **He [16]** | **2016** | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 16 |
| **Sutton[17]** | **2006** | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 19 |
| **Sutton[18]** | **2008** | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 18 |
| Birth Chort | | | | | | | | | | | | | | | | | | | | | |
| **Coffin [19]** | **2012** | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 19 |
| **Liu [10]** | **2013** | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 19 |
| **McEwan[20]** | **2013** | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 18 |
| **McGarry[21]** | **2012** | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 18 |

| Author | Year | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | Total (/19) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Nakamura[12]** | **2008** | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 17 |
| **Rein[22]** | **2012** | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 19 |
| **Ruggeri[23]** | **2013** | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 18 |
| **Wong[24]** | **2014** | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 19 |
| General Population | | | | | | | | | | | | | | | | | | | | | |
| **Coffin [19]** | 2012 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 19 |
| **Eckman[25]** | 2013 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 19 |
| **Helsper [3]** | 2012 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 19 |
| **Kim[26]** | 2015 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 19 |
| **Singer [27]** | 2001 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 17 |
| Other Populations | | | | | | | | | | | | | | | | | | | | | |
| **Brett-Major[28]** | **2016** | 1 | 1 | 1 | 0 | 0 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 12 |
| **Honeycutt[29]** | **2007** | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 1 | 0 | 1 | 1 | 1 | 0 | 1 | 14 |
| **Jossett[30]** | **2004** | 1 | 1 | 1 | 1 | 0 | 0 | 1 | 1 | 1 | 1 | 0 | 0 | 1 | 0 | 1 | 1 | 1 | 0 | 1 | 13 |
| **Orkin[31]** | **2016** | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 1 | 11 |
| **Stein[5]** | **2003** | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 18 |
| **Tramarin[7]** | **2008** | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 1 | 16 |

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